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Transhumanism, medical technology and slippery slopes

M J McNamee, S D Edwards

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In this article, transhumanism is considered to be a quasi-medical ideology that seeks to promote a variety of therapeutic and human-enhancing aims. Moderate conceptions are distinguished from strong conceptions of transhumanism and the strong conceptions were found to be more problematic than the moderate ones. A particular critique of Boström's defence of transhumanism is presented. Various forms of slippery slope arguments that may be used for and against transhumanism are discussed and one particular criticism, moral arbitrariness, that undermines both weak and strong transhumanism is highlighted.

No less a figure than Francis Fukuyama[1] recently labelled transhumanism as ''the world's most dangerous idea''. Such an eye-catching condemnation almost certainly denotes an issue worthy of serious consideration, especially given the centrality of biomedical technology to its aims. In this article, we consider transhumanism as an ideology that seeks to evangelise its human-enhancing aims. Given that transhumanism covers a broad range of ideas, we distinguish moderate conceptions from strong ones and find the strong conceptions more problematic than the moderate ones. We also offer a critique of Boström's[2] position published in this journal. We discuss various forms of slippery slope arguments that may be used for and against transhumanism and highlight one particular criticism, moral arbitrariness, which undermines both forms of transhumanism.

WHAT IS TRANSHUMANISM?

At the beginning of the 21st century, we find ourselves in strange times; facts and fantasy find their way together in ethics, medicine and philosophy journals and websites.[2–4] Key sites of contestation include the very idea of human nature, the place of embodiment within medical ethics and, more specifically, the systematic reflections on the place of medical and other technologies in conceptions of the good life. A reflection of this situation is captured by Dyens[5] who writes,

> What we are witnessing today is the very convergence of environments, systems, bodies, and ontology toward and into the intelligent matter. We can no longer speak of the human condition or even of the posthuman condition. We must now refer to the intelligent condition.

We wish to evaluate the contents of such dialogue and to discuss, if not the death of human nature, then at least its dislocation and derogation in the thinkers who label themselves transhumanists.

One difficulty for critics of transhumanism is that a wide range of views fall under its label.[6] Not merely are there idiosyncrasies of individual academics, but there does not seem to exist an absolutely agreed on definition of transhumanism. One can find not only substantial differences between key authors[2–4 7 8] and the disparate disciplinary nuances of their exhortations, but also subtle variations of its chief representatives in the offerings of people. It is to be expected that any ideology transforms over time and not least of all in response to internal and external criticism. Yet, the transhumanism critic faces a further problem of identifying a robust target that stays still sufficiently long to locate it properly in these web-driven days without constructing a ''straw man'' to knock over with the slightest philosophical breeze. For the purposes of targeting a sufficiently substantial target, we identify the writings of one of its clearest and intellectually robust proponents, the Oxford philosopher and cofounder of the World Transhumanist Association , Nick Boström,[2] who has written recently in these pages of transhumanism's desire to make good the ''half-baked'' project[3] that is human nature.

Before specifically evaluating Boström's position, it is best first to offer a global definition for transhumanism and then to locate it among the range of views that fall under the heading. One of the most celebrated advocates of transhumanism is Max More, whose website reads ''no more gods, nor more faith, no more timid holding back. The future belongs to posthumanity''.[8] We will have a clearer idea then of the kinds of position transhumanism stands in direct opposition to. Specifically, More[8] asserts,

> ''Transhumanism'' is a blanket term given to the school of thought that refuses to accept traditional human limitations such as death, disease and other biological frailties. Transhumans are typically interested in a variety of futurist topics, including space migration, mind uploading and cryonic suspension. Transhumans are also extremely interested in more immediate subjects such as bio- and nano-technology, computers and neurology. Transhumans deplore the standard paradigms that attempt to render our

See end of article for authors' affiliations

Correspondence to: Dr Mike McNamee, Centre for Philosophy, Humanities and Law in Healthcare, School of Health Science, University of Wales, Swansea SA2 8PP, UK; m.j.mcnamee@swansea.ac.uk

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world comfortable at the sake of human fulfilment.[8]

Strong transhumanism advocates see themselves engaged in a project, the purpose of which is to overcome the limits of human nature. Whether this is the foundational claim, or merely the central claim, is not clear. These limitations—one may describe them simply as features of human nature, as the idea of labelling them as limitations is itself to take up a negative stance towards them—concern appearance, human sensory capacities, intelligence, lifespan and vulnerability to harm. According to the extreme transhumanism programme, technology can be used to vastly enhance a person's intelligence; to tailor their appearance to what they desire; to lengthen their lifespan, perhaps to immortality; and to reduce vastly their vulnerability to harm. This can be done by exploitation of various kinds of technology, including genetic engineering, cybernetics, computation and nanotechnology. Whether technology will continue to progress sufficiently, and sufficiently predictably, is of course quite another matter.

Advocates of transhumanism argue that recruitment or deployment of these various types of technology can produce people who are intelligent and immortal, but who are not members of the species *Homo sapiens*. Their species type will be ambiguous—for example, if they are cyborgs (part human, part machine)—or, if they are wholly machines, they will lack any common genetic features with human beings. A legion of labels covers this possibility; we find in Dyen's[5] recently translated book a variety of cultural bodies, perhaps the most extreme being cyberpunks:

> ...a profound misalignment between existence and its manifestation. This misalignment produces bodies so transformed, so dissociated, and so asynchronized, that their only outcome is gross mutation. Cyberpunk bodies are horrible, strange and mysterious (think of *Alien*, *Robocop*, *Terminator*, etc.), for they have no real attachment to any biological structure. (p 75)

Perhaps a reasonable claim is encapsulated in the idea that such entities will be posthuman. The extent to which posthuman might be synonymous with transhumanism is not clear. Extreme transhumanists strongly support such developments.

At the other end of transhumanism is a much less radical project, which is simply the project to use technology to enhance human characteristics—for example, beauty, lifespan and resistance to disease. In this less extreme project, there is no necessary aspiration to shed human nature or human genetic constitution, just to augment it with technology where possible and where desired by the person.

WHO IS FOR TRANSHUMANISM?

At present it seems to be a movement based mostly in North America, although there are some adherents from the UK. Among its most intellectually sophisticated proponents is Nick Boström. Perhaps the most outspoken supporters of transhumanism are people who see it simply as an issue of free choice. It may simply be the case that moderate transhumanists are libertarians at the core. In that case, transhumanism merely supplies an overt technological dimension to libertarianism. If certain technological developments are possible, which they as competent choosers desire, then they should not be prevented from acquiring the technologically driven enhancements they desire. One obvious line of criticism here may be in relation to the inequality that necessarily arises with respect to scarce goods and services distributed by market mechanisms.[9] We will elaborate this point in the Transhumanism and slippery slopes section.

So, one group of people for the transhumanism project sees it simply as a way of improving their own life by their own standards of what counts as an improvement. For example, they may choose to purchase an intervention, which will make them more intelligent or even extend their life by 200 years. (Of course it is not self-evident that everyone would regard this as an improvement.) A less vociferous group sees the transhumanism project as not so much bound to the expansion of autonomy (notwithstanding our criticism that will necessarily be effected only in the sphere of economic consumer choice) as one that has the potential to improve the quality of life for humans in general. For this group, the relationship between transhumanism and the general good is what makes transhumanism worthy of support. For the other group, the worth of transhumanism is in its connection with their own conception of what is good for them, with the extension of their personal life choices.

WHAT CAN BE SAID IN ITS FAVOUR?

Of the many points for transhumanism, we note three. Firstly, transhumanism seems to facilitate two aims that have commanded much support. The use of technology to improve humans is something we pretty much take for granted. Much good has been achieved with low-level technology in the promotion of public health. The construction of sewage systems, clean water supplies, etc, is all work to facilitate this aim and is surely good work, work which aims at, and in this case achieves, a good. Moreover, a large portion of the modern biomedical enterprise is another example of a project that aims at generating this good too.

Secondly, proponents of transhumanism say it presents an opportunity to plan the future development of human beings, the species *Homo sapiens*. Instead of this being left to the evolutionary process and its exploitation of random mutations, transhumanism presents a hitherto unavailable option: tailoring the development of human beings to an ideal blueprint. Precisely whose ideal gets blueprinted is a point that we deal with later.

Thirdly, in the spirit of work in ethics that makes use of a technical idea of personhood, the view that moral status is independent of membership of a particular species (or indeed any biological species), transhumanism presents a way in which moral status can be shown to be bound to intellectual capacity rather than to human embodiment as such or human vulnerability in the capacity of embodiment (Harris, 1985).[9a]

WHAT CAN BE SAID AGAINST IT?

Critics point to consequences of transhumanism, which they find unpalatable. One possible consequence feared by some commentators is that, in effect, transhumanism will lead to the existence of two distinct types of being, the human and the posthuman. The human may be incapable of breeding with the posthuman and will be seen as having a much lower moral standing. Given that, as Buchanan *et al*[9] note, much moral progress, in the West at least, is founded on the category of the human in terms of rights claims, if we no longer have a common humanity, what rights, if any, ought to be enjoyed by transhumans? This can be viewed either as a criticism (we poor humans are no longer at the top of the evolutionary tree) or simply as a critical concern that invites further argumentation. We shall return to this idea in the final section, by way of identifying a deeper problem with the open-endedness of transhumanism that builds on this recognition.

In the same vein, critics may argue that transhumanism will increase inequalities between the rich and the poor. The

rich can afford to make use of transhumanism, but the poor will not be able to. Indeed, we may come to think of such people as deficient, failing to achieve a new heightened level of normal functioning.[9] In the opposing direction, critical observers may say that transhumanism is, in reality, an irrelevance, as very few will be able to use the technological developments even if they ever manifest themselves. A further possibility is that transhumanism could lead to the extinction of humans and posthumans, for things are just as likely to turn out for the worse as for the better (eg, those for precautionary principle).

One of the deeper philosophical objections comes from a very traditional source. Like all such utopian visions, transhumanism rests on some conception of good. So just as humanism is founded on the idea that humans are the measure of all things and that their fulfilment is to be found in the powers of reason extolled and extended in culture and education, so too transhumanism has a vision of the good, albeit one loosely shared. For one group of transhumanists, the good is the expansion of personal choice. Given that autonomy is so widely valued, why not remove the barriers to enhanced autonomy by various technological interventions? Theological critics especially, but not exclusively, object to what they see as the imperialising of autonomy. Elshtain[10] lists the three c's: choice, consent and control. These, she asserts, are the dominant motifs of modern American culture. And there is, of course, an army of communitarians (Bellah *et al*,[10a] MacIntyre,[10b] Sandel,[10c] Taylor[10d] and Walzer[10e]) ready to provide support in general moral and political matters to this line of criticism. One extension of this line of transhumanism thinking is to align the valorisation of autonomy with economic rationality, for we may as well be motivated by economic concerns as by moral ones where the market is concerned. As noted earlier, only a small minority may be able to access this technology (despite Boström's naive disclaimer for democratic transhumanism), so the technology necessary for transhumanist transformations is unlikely to be prioritised in the context of artificially scarce public health resources. One other population attracted to transhumanism will be the elite sports world, fuelled by the media commercialisation complex—where mere mortals will get no more than a glimpse of the transhuman in competitive physical contexts. There may be something of a double-binding character to this consumerism. The poor, at once removed from the possibility of such augmentation, pay (per view) for the pleasure of their envy.

If we argue against the idea that the good cannot be equated with what people choose simpliciter, it does not follow that we need to reject the requisite medical technology outright. Against the more moderate transhumanists, who see transhumanism as an opportunity to enhance the general quality of life for humans, it is nevertheless true that their position presupposes some conception of the good. What kind of traits is best engineered into humans: disease resistance or parabolic hearing? And unsurprisingly, transhumanists disagree about precisely what ''objective goods'' to select for installation into humans or posthumans.

Some radical critics of transhumanism see it as a threat to morality itself.[1 11] This is because they see morality as necessarily connected to the kind of vulnerability that accompanies human nature. Think of the idea of human rights and the power this has had in voicing concern about the plight of especially vulnerable human beings. As noted earlier a transhumanist may be thought to be beyond humanity and as neither enjoying its rights nor its obligations. Why would a transhuman be moved by appeals to human solidarity? Once the prospect of posthumanism emerges, the whole of morality is thus threatened because the existence of human nature itself is under threat.

One further objection voiced by Habermas[11] is that interfering with the process of human conception, and by implication human constitution, deprives humans of the ''naturalness which so far has been a part of the taken-for-granted background of our self-understanding as a species'' and ''Getting used to having human life biotechnologically at the disposal of our contingent preferences cannot help but change our normative self-understanding'' (p 72).

On this account, our self-understanding would include, for example, our essential vulnerability to disease, ageing and death. Suppose the strong transhumanism project is realised. We are no longer thus vulnerable: immortality is a real prospect. Nevertheless, conceptual caution must be exercised here—even transhumanists will be susceptible in the manner that Hobbes[12] noted. Even the strongest are vulnerable in their sleep. But the kind of vulnerability transhumanism seeks to overcome is of the internal kind (not Hobbes's external threats). We are reminded of Woody Allen's famous remark that he wanted to become immortal, not by doing great deeds but simply by not dying. This will result in a radical change in our self-understanding, which has inescapably normative elements to it that need to be challenged. Most radically, this change in self-understanding may take the form of a change in what we view as a good life. Hitherto a human life, this would have been assumed to be finite. Transhumanists suggest that even now this may change with appropriate technology and the ''right'' motivation.

Do the changes in self-understanding presented by transhumanists (and genetic manipulation) necessarily have to represent a change for the worse? As discussed earlier, it may be that the technology that generates the possibility of transhumanism can be used for the good of humans—for example, to promote immunity to disease or to increase quality of life. Is there really an intrinsic connection between acquisition of the capacity to bring about transhumanism and moral decline? Perhaps Habermas's point is that moral decline is simply more likely to occur once radical enhancement technologies are adopted as a practice that is not intrinsically evil or morally objectionable. But how can this be known in advance? This raises the spectre of slippery slope arguments.

But before we discuss such slopes, let us note that the kind of approach (whether characterised as closed-minded or sceptical) Boström seems to dislike is one he calls speculative. He dismisses as speculative the idea that offspring may think themselves lesser beings, commodifications of their parents' egoistic desires (or some such). None the less, having pointed out the lack of epistemological standing of such speculation, he invites us to his own apparently more congenial position:

> We might speculate, instead, that germ-line enhancements will lead to more love and parental dedication. Some mothers and fathers might find it easier to love a child who, thanks to enhancements, is bright, beautiful, healthy, and happy. The practice of germ-line enhancement might lead to better treatment of people with disabilities, because a general demystification of the genetic contributions to human traits could make it clearer that people with disabilities are not to blame for their disabilities and a decreased incidence of some disabilities could lead to more assistance being available for the remaining affected people to enable them to live full, unrestricted lives through various technological and social supports. Speculating about possible psychological or cultural effects of germ-line engineering can therefore cut both ways. Good consequences no less than bad ones are possible. In the absence of sound arguments for the view that the negative consequences would predominate, such speculations

> provide no reason against moving forward with the technology. Ruminations over hypothetical side effects may serve to make us aware of things that could go wrong so that we can be on the lookout for untoward developments. By being aware of the perils in advance, we will be in a better position to take preventive countermeasures. (Boström, 2003, p 498)

Following Boström's[3] speculation then, what grounds for hope exist? Beyond speculation, what kinds of arguments does Boström offer? Well, most people may think that the burden of proof should fall to the transhumanists. Not so, according to Boström. Assuming the likely enormous benefits, he turns the tables on this intuition—not by argument but by skilful rhetorical speculation. We quote for accuracy of representation (emphasis added):

> Only after a fair comparison of the risks with the likely positive consequences can any conclusion based on a cost-benefit analysis be reached. In the case of germ-line enhancements, the potential gains are enormous. Only rarely, however, are the potential gains discussed, perhaps because they are too obvious to be of much theoretical interest. By contrast, uncovering subtle and non-trivial ways in which manipulating our genome could undermine deep values is philosophically a lot more challenging. But if we think about it, we recognize that the promise of genetic enhancements is anything but insignificant. Being free from severe genetic diseases would be good, as would having a mind that can learn more quickly, or having a more robust immune system. Healthier, wittier, happier people may be able to reach new levels culturally. To achieve a significant enhancement of human capacities would be to embark on the transhuman journey of exploration of some of the modes of being that are not accessible to us as we are currently constituted, possibly to discover and to instantiate important new values. On an even more basic level, genetic engineering holds great potential for alleviating unnecessary human suffering. Every day that the introduction of effective human genetic enhancement is delayed is a day of lost individual and cultural potential, and a day of torment for many unfortunate sufferers of diseases that could have been prevented. Seen in this light, *proponents of a ban or a moratorium on human genetic modification must take on a heavy burden of proof* in order to have the balance of reason tilt in their favor. (Bostrom,[3] pp 498–9).

Now one way in which such a balance of reason may be had is in the idea of a slippery slope argument. We now turn to that.

TRANSHUMANISM AND SLIPPERY SLOPES

A proper assessment of transhumanism requires consideration of the objection that acceptance of the main claims of transhumanism will place us on a slippery slope. Yet, paradoxically, both proponents and detractors of transhumanism may exploit slippery slope arguments in support of their position. It is necessary therefore to set out the various arguments that fall under this title so that we can better characterise arguments for and against transhumanism. We shall therefore examine three such attempts[13–15] but argue that the arbitrary slippery slope[15] may undermine all versions of transhumanists, although not every enhancement proposed by them.

Schauer[13] offers the following essentialist analysis of slippery slope arguments. A ''pure'' slippery slope is one where a ''particular act, seemingly innocuous when taken in isolation, may yet lead to a future host of similar but increasingly pernicious events''. Abortion and euthanasia are classic candidates for slippery slope arguments in public discussion and policy making. Against this, however, there is no reason to suppose that the future events (acts or policies) down the slope need to display similarities—indeed we may propose that they will lead to a whole range of different, although equally unwished for, consequences. The vast array of enhancements proposed by transhumanists would not be captured under this conception of a slippery slope because of their heterogeneity. Moreover, as Sternglantz[16] notes, Schauer undermines his case when arguing that greater linguistic precision undermines the slippery slope and that indirect consequences often bolster slippery slope arguments. It is as if the slippery slopes would cease in a world with greater linguistic precision or when applied only to direct consequences. These views do not find support in the later literature. Schauer does, however, identify three non-slippery slope arguments where the advocate's aim is (a) to show that the bottom of a proposed slope has been arrived at; (b) to show that a principle is excessively broad; (c) to highlight how granting authority to X will make it more likely that an undesirable outcome will be achieved. Clearly (a) cannot properly be called a slippery slope argument in itself, while (b) and (c) often have some role in slippery slope arguments.

The excessive breadth principle can be subsumed under Bernard Williams's distinction between slippery slope arguments with (a) horrible results and (b) arbitrary results. According to Williams, the nature of the bottom of the slope allows us to determine which category a particular argument falls under. Clearly, the most common form is the slippery slope to a horrible result argument. Walton[14] goes further in distinguishing three types: (a) thin end of the wedge or precedent arguments; (b) Sorites arguments; and (c) domino-effect arguments. Importantly, these arguments may be used both by antagonists and also by advocates of transhumanism. We shall consider the advocates of transhumanism first.

In the thin end of the wedge slippery slopes, allowing P will set a precedent that will allow further precedents (Pn) taken to an unspecified problematic terminus. Is it necessary that the end point has to be bad? Of course this is the typical linguistic meaning of the phrase ''slippery slopes''. Nevertheless, we may turn the tables here and argue that [the] slopes may be viewed positively too.[17] Perhaps a new phrase will be required to capture ineluctable slides (ascents?) to such end points. This would be somewhat analogous to the ideas of vicious and virtuous cycles. So transhumanists could argue that, once the artificial generation of life through technologies of in vitro fertilisation was thought permissible, the slope was foreseeable, and transhumanists are doing no more than extending that life-creating and fashioning impulse.

In Sorites arguments, the inability to draw clear distinctions has the effect that allowing P will not allow us to consistently deny Pn. This slope follows the form of the Sorites paradox, where taking a grain of sand from a heap does not prevent our recognising or describing the heap as such, even though it is not identical with its former state. At the heart of the problem with such arguments is the idea of conceptual vagueness. Yet the logical distinctions used by philosophers are often inapplicable in the real world.[15 18] Transhumanists may well seize on this vagueness and apply a Sorites argument as follows: as therapeutic interventions are currently morally permissible, and there is no clear distinction between treatment and enhancement, enhancement interventions are morally permissible too. They may ask whether we can really distinguish categorically between the

added functionality of certain prosthetic devices and sonar senses.

In domino-effect arguments, the domino conception of the slippery slope, we have what others often refer to as a causal slippery slope.[19] Once P is allowed, a causal chain will be effected allowing Pn and so on to follow, which will precipitate increasingly bad consequences.

In what ways can slippery slope arguments be used against transhumanism? What is wrong with transhumanism? Or, better, is there a point at which we can say transhumanism is objectionable? One particular strategy adopted by proponents of transhumanism falls clearly under the aspect of the thin end of the wedge conception of the slippery slope. Although some aspects of their ideology seem aimed at unqualified goods, there seems to be no limit to the aspirations of transhumanism as they cite the powers of other animals and substances as potential modifications for the transhumanist. Although we can admire the sonic capacities of the bat, the elastic strength of lizards' tongues and the endurability of Kevlar in contrast with traditional construction materials used in the body, their transplantation into humans is, to coin Kass's celebrated label, ''repugnant'' (Kass, 1997).[19a]

Although not all transhumanists would support such extreme enhancements (if that is indeed what they are), less radical advocates use justifications that are based on therapeutic lines up front with the more Promethean aims less explicitly advertised. We can find many examples of this manoeuvre. Take, for example, the Cognitive Enhancement Research Institute in California. Prominently displayed on its website front page (http://www.ceri.com/) we read, ''Do you know somebody with Alzheimer's disease? Click to see the latest research breakthrough.'' The mode is simple: treatment by front entrance, enhancement by the back door. Borgmann,[20] in his discussion of the uses of technology in modern society, observed precisely this argumentative strategy more than 20 years ago:

> The main goal of these programs seems to be the domination of nature. But we must be more precise. The desire to dominate does not just spring from a lust of power, from sheer human imperialism. It is from the start connected with the aim of liberating humanity from disease, hunger, and toil and enriching life with learning, art and athletics.

Who would want to deny the powers of viral diseases that can be genetically treated? Would we want to draw the line at the transplantation of non-human capacities (sonar path finding)? Or at in vivo fibre optic communications backbone or anti-degeneration powers? (These would have to be non-human by hypothesis). Or should we consider the scope of technological enhancements that one chief transhumanist, Natasha Vita More[21], propounds:

> A transhuman is an evolutionary stage from being exclusively biological to becoming post-biological. Post-biological means a continuous shedding of our biology and merging with machines. (…) The body, as we transform ourselves over time, will take on different types of appearances and designs and materials. (…)
> For hiking a mountain, I'd like extended leg strength, stamina, a skin-sheath to protect me from damaging environmental aspects, self-moisturizing, cool-down capability, extended hearing and augmented vision (Network of sonar sensors depicts data through solid mass and map images onto visual field. Overlay window shifts spectrum frequencies. Visual scratch pad relays mental ideas to visual recognition bots. Global Satellite interface at micro-zoom range).
> For a party, I'd like an eclectic look - a glistening bronze skin with emerald green highlights, enhanced height to tower above other people, a sophisticated internal sound system so that I could alter the music to suit my own taste, memory enhance device, emotional-select for feel-good people so I wouldn't get dragged into anyone's inappropriate conversations. And parabolic hearing so that I could listen in on conversations across the room if the one I was currently in started winding down.

Notwithstanding the difficulty of bringing together transhumanism under one movement, the sheer variety of proposals merely contained within Vita More's catalogue means that we cannot determinately point to a precise station at which we can say, ''Here, this is the end we said things would naturally progress to.'' But does this pose a problem? Well, it certainly makes it difficult to specify exactly a ''horrible result'' that is supposed to be at the bottom of the slope. Equally, it is extremely difficult to say that if we allow precedent X, it will allow practices Y or Z to follow as it is not clear how these practices Y or Z are (if at all) connected with the precedent X. So it is not clear that a form of precedent-setting slippery slope can be strictly used in every case against transhumanism, although it may be applicable in some.

Nevertheless, we contend, in contrast with Boström that the burden of proof would fall to the transhumanist. Consider in this light, a Sorites-type slope. The transhumanist would have to show how the relationship between the therapeutic practices and the enhancements are indeed transitive. We know night from day without being able to specify exactly when this occurs. So simply because we cannot determine a precise distinction between, say, genetic treatments G1, G2 and G3, and transhumanism enhancements T1, T2 and so on, it does not follow that there are no important moral distinctions between G1 and T20. According to Williams,[15] this kind of indeterminacy arises because of the conceptual vagueness of certain terms. Yet, the indeterminacy of so open a predicate ''heap'' is not equally true of ''therapy'' or ''enhancement''. The latitude they permit is nowhere near so wide.

Instead of objecting to Pn on the grounds that Pn is morally objectionable (ie, to depict a horrible result), we may instead, after Williams, object that the slide from P to Pn is simply morally arbitrary, when it ought not to be. Here, we may say, without specifying a horrible result, that it would be difficult to know what, in principle, can ever be objected to. And this is, quite literally, what is troublesome. It seems to us that this criticism applies to all categories of transhumanism, although not necessarily to all enhancements proposed by them. Clearly, the somewhat loose identity of the movement—and the variations between strong and moderate versions—makes it difficult to sustain this argument unequivocally. Still the transhumanist may be justified in asking, ''What is wrong with arbitrariness?'' Let us consider one brief example. In aspects of our lives, as a widely shared intuition, we may think that in the absence of good reasons, we ought not to discriminate among people arbitrarily. Healthcare may be considered to be precisely one such case. Given the ever-increasing demand for public healthcare services and products, it may be argued that access to them typically ought to be governed by publicly disputable criteria such as clinical need or potential benefit, as opposed to individual choices of an arbitrary or subjective nature. And nothing in transhumanism seems to allow for such objective dispute, let alone prioritisation. Of course, transhumanists such as More find no such disquietude. His phrase ''No more timidity'' is a typical token of transhumanist slogans. We

applaud advances in therapeutic medical technologies such as those from new genetically based organ regeneration to more familiar prosthetic devices. Here the ends of the interventions are clearly medically defined and the means regulated closely. This is what prevents transhumanists from adopting a Sorites-type slippery slope. But in the absence of a telos, of clearly and substantively specified ends (beyond the mere banner of enhancement), we suggest that the public, medical professionals and bioethicists alike ought to resist the potentially open-ended transformations of human nature. For if all transformations are in principle enchancements, then surely none are. The very application of the word may become redundant. Thus it seems that one strong argument against transhumanism generally—the arbitrary slippery slope—presents a challenge to transhumanism, to show that all of what are described as transhumanist enhancements are imbued with positive normative force and are not merely technological extensions of libertarianism, whose conception of the good is merely an extension of individual choice and consumption.

LIMITS OF TRANSHUMANIST ARGUMENTS FOR MEDICAL TECHNOLOGY AND PRACTICE

Already, we have seen the misuse of a host of therapeutically designed drugs used by non-therapeutic populations for enhancements. Consider the non-therapeutic use of human growth hormone in non-clinical populations. Such is the present perception of height as a positional good in society that Cuttler *et al*[22] report that the proportion of doctors who recommended human growth hormone treatment of short non-growth hormone deficient children ranged from 1% to 74%. This is despite its contrary indication in professional literature, such as that of the Pediatric Endocrine Society, and considerable doubt about its efficacy.[23 24] Moreover, evidence supports the view that recreational body builders will use the technology, given the evidence of their use or misuse of steroids and other biotechnological products.[25 26] Finally, in the sphere of elite sport, which so valorises embodied capacities that may be found elsewhere in greater degree, precision and sophistication in the animal kingdom or in the computer laboratory, biomedical enhancers may latch onto the genetically determined capacities and adopt or adapt them for their own commercially driven ends.

The arguments and examples presented here do no more than to warn us of the enhancement ideologies, such as transhumanism, which seek to predicate their futuristic agendas on the bedrock of medical technological progress aimed at therapeutic ends and are secondarily extended to loosely defined enhancement ends. In discussion and in bioethical literatures, the future of genetic engineering is often challenged by slippery slope arguments that lead policy and practice to a horrible result. Instead of pointing to the undesirability of the ends to which transhumanism leads, we have pointed out the failure to specify their telos beyond the slogans of ''overcoming timidity'' or Boström's[3] exhortation that the passive acceptance of ageing is an example of ''reckless and dangerous barriers to urgently needed action in the biomedical sphere''.

We propose that greater care be taken to distinguish the slippery slope arguments that are used in the emotionally loaded exhortations of transhumanism to come to a more judicious perspective on the technologically driven agenda for biomedical enhancement. Perhaps we would do better to consider those other all-too-human frailties such as violent aggression, wanton self-harming and so on, before we turn too readily to the richer imaginations of biomedical technologists.

Authors' affiliations
M J McNamee, S D Edwards, Centre for Philosophy, Humanities and Law in Healthcare, School of Health Science, University of Wales, Swansea, UK

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